

We claim:

1. A process for making an aqueous hydrocarbon fuel composition comprising:
 - a) preparing at least one emulsifier to form a hydrocarbon fuel emulsifier mixture wherein the emulsifier comprises the reaction product of (A) a polyacidic polymer, (B) at least one fuel soluble product made by reacting at least one hydrocarbyl-substituted carboxylic acid acylating agent, and (C) an amine selected from the group consisting of a hydroxy amine, polymer amine or combinations thereof;
 - b) mixing the emulsifier with a liquid hydrocarbon fuel to form a hydrocarbon fuel emulsifier mixture; and
 - c) mixing the hydrocarbon fuel emulsifier mixture with water or water and ammonium nitrate under emulsification conditions to form an aqueous hydrocarbon fuel composition, wherein the aqueous hydrocarbon fuel composition includes a discontinuous phase, the discontinuous phase being comprised of aqueous droplets having a mean diameter of 1.0 micron or less.
- 15 2. The process of claim 1 wherein the emulsifier comprises mixing the emulsifier with at least one of an ionic or non-ionic compound having a hydrophilic-lipophilic balance of about 1-40.
- 20 3. The process of claim 1 wherein the emulsifier comprises mixing the emulsifier with at least one of a water-soluble compound selected from the group consisting of amine salts, ammonium salts, azide compounds, nitrate esters, nitramine, nitro compounds, alkali metal salts, alkaline earth metal salts and combinations thereof.
- 25 4. The process of claim 2 wherein the emulsifier comprises mixing the emulsifier with at least one of a water-soluble compound selected from the group consisting of amine salts, ammonium salts, azide compounds, nitrate esters, nitramine, nitro compounds, alkali metal salts, alkaline earth metal salts and combinations thereof.
- 30 5. The process of claim 1 wherein the temperature in the range of 60°C to about 250°C, at atmospheric temperature until a crosslinked polymer dispersant is formed.

6. The process of claim 1 wherein the polyacidic polymer is selected from the group consisting of C₄ to C₃₀ olefin/maleic anhydride copolymers, maleic anhydride/styrene copolymers, polymaleic anhydride, acrylic and methacrylic acid containing polymers, 5 poly-alkyl acrylates, reaction products of maleic anhydride with polymers with multiple double bonds and combinations thereof.
7. The process of claim 6 wherein the C₄ to C₃₀ olefin/maleic anhydride copolymer has the olefin selected from the group consisting of 1-butene, 1-pentene, 1-hexene, 1-heptene, 1-octene, 1-nonene, 1-decene, 1-undecene, 1-dodecene, 1-tridecene, 1-tetradecene, 1-pentadecene, 1-hexadecene, 1-heptadecene, 1-octadecene, 1-eicosene, 1-docosene, 1-triacontene, and the like. The alpha olefin fractions that are useful include C₁₅₋₁₈ alpha-olefins, C₁₂₋₁₆ alpha-olefins, C₁₄₋₁₆ alpha-olefins, C₁₄₋₁₈ alpha-olefins, C₁₆₋₁₈ alpha-olefins, C₁₈₋₂₄ alpha-olefins, C₁₈₋₃₀ alpha-olefins, and combinations thereof. 10
8. The process of claim 1 wherein the hydrocarbon fuel emulsifier mixture is made by a method selected from the group consisting of condensation, condensation/polymerization process, and combinations thereof. 15
9. A process of claim 1 wherein the emulsifier is prepared by reacting A) a polyacidic polymer with a fuel soluble product comprising the reaction product of B) at least one fuel soluble product made by reacting at least one hydrocarbyl-substituted carboxylic acid acylating agent and C) a hydroxy amine, a polyamine, or combinations thereof. 20
- 25 10. An aqueous hydrocarbon fuel composition comprising:
 - a) a continuous phase of hydrocarbon fuel;
 - b) a discontinuous aqueous phase being comprised of aqueous droplets having a mean diameter of 1.0 micron or less; and
 - c) an emulsifying amount of an emulsifier composition comprising the reaction product of (A) a polyacidic polymer, (B) at least one fuel soluble product made by reacting at least one hydrocarbyl-substituted carboxylic acid acylating agent and C) a hydroxy amine, a polyamine, or combinations thereof. 30

11. The composition of claim 10 wherein the emulsifier comprises a mixture of 1) the reaction product of A) a polyacidic polymer, B) at least one fuel soluble product made by reacting at least one hydrocarbyl-substituted carboxylic acid acylating agent and C)

5 a hydroxy amine and/or a polyamine mixed with 2) at least one of an ionic or non-ionic compound having a hydrophilic-lipophilic balance of about 1-40.

12. The composition of claim 10 wherein the emulsifier comprises a mixture of the 1)

reaction product of A) a polyacidic polymer, B) at least one fuel-soluble product made by reacting at least one hydrocarbyl-substituted carboxylic acid acylating agent and C) a hydroxy amine or a polyamine with 2) a water-soluble compound selected from the group consisting of amine salts, ammonium salts, azide compounds, nitrate esters, nitramine, nitro compounds, alkali metal salts, alkaline earth metal salts, and combinations thereof.

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13. The composition of claim 10 wherein the emulsifier comprises a mixture of 1) the reaction product of A) a polyacidic polymer, B) at least one fuel soluble product made by reacting at least one hydrocarbyl-substituted carboxylic acid acylating agent and C)

a hydroxy amine and/or a polyamine mixed with 2) at least one of an ionic or non-ionic compound having a hydrophilic-lipophilic balance of about 1-40, and with 3) a water-soluble compound selected from the group consisting of amine salts, ammonium salts, azide compounds, nitrate esters, nitramine, nitro compounds, alkali metal salts, alkaline earth metal salts, and combinations thereof.

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25 14. The composition of claim 10 wherein the polyacidic polymer is selected from the group consisting of C₄ to C₃₀ olefin/maleic anhydride copolymers, maleic anhydride/styrene copolymers, polymaleic anhydride, acrylic and methacrylic acid and/or esters containing polymers, poly-alkyl acrylates, reaction products of maleic anhydride with polymers with multiple double bonds and combinations thereof.

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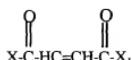
15. The composition of claim 14 wherein the C₄ to C₃₀ olefin/maleic anhydride copolymer has the olefin selected from the group consisting of 1-butene, 1-pentene, 1-hexene, 1-

5 heptene, 1-octene, 1-nonene, 1-decene, 1-undecene, 1-dodecene, 1-tridecene, 1-tetradecene, 1-pentadecene, 1-hexadecene, 1-heptadecene, 1-octadecene, 1-eicosene, 1-docosene, 1-triacontene, and the like. The alpha olefin fractions that are useful include C₁₅₋₁₈ alpha-olefins, C₁₂₋₁₆ alpha-olefins, C₁₄₋₁₆ alpha-olefins, C₁₄₋₁₈ alpha-olefins, C₁₆₋₁₈ alpha-olefins, C₁₈₋₂₄ alpha-olefins, C₁₈₋₃₀ alpha-olefins, and combinations thereof.

16. The composition of claim 10 wherein said polyacidic polymer is selected from the group consisting of C₈ to C₂₀ olefin/maleic anhydride copolymers.

10 17. The composition of claim 10 wherein said polyacidic polymer is selected from the group consisting of 1-octadecene/maleic anhydride copolymer.

18. The composition of claim 10 wherein the polyacidic polymer is a copolymer of an olefin and a compound having the structure



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wherein X and X₁ are the same or different provided that at least one of X and X₁ is such that the copolymer can function as a carboxylic acylating agent.

19. The composition of claim 10 wherein the polyacidic polymer is a copolymer of octadecene-1 and maleic anhydride, the copolymer having a number average molecular weight from greater than 6300 to less than 12000.

20. The composition of claim 10 wherein the emulsifier comprises about 25% to about 95% of the fuel soluble product and about 0.1% to about 50% of polyacidic polymer.

25 21. The composition of claim 10 wherein the emulsifier comprises about 50% to about 92% of the fuel soluble product and about 1% to about 20% of polyacidic polymer.

22. The composition of claim 10 wherein the emulsifier comprises about 70% to about 90% of the fuel soluble product and about 5% to about 10% of polyacidic polymer.

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